



Railroad Commission of Texas

**Forms GW-1 & GW-2: Groundwater Protection  
Determination Requests and Statewide Rules  
13, 14, 9, 46, 99 & 100**

August 5, 2021

The meeting will begin shortly.





# Forms GW-1 & GW-2: Groundwater Protection Determination Requests and Statewide Rules 13, 14, 9, 46, 99 & 100

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# Power Point Presentation



This presentation is available for download from the RRC website at

<https://www.rrc.texas.gov/oil-and-gas/workshops-and-conferences/rrc-regulatory-webinars/regulatory-webinars-2021-schedule/>

# Table Of Contents



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- What does the GAU do
- Water classification
- Injection, Disposal & Fluid Level (H-1,W-14,H-15)
- GAU Tools and Techniques (Online demo)
- The Application and GAU letter (GW-1 & GW-2 - Online demo)

# Who We Are



- Oil & Gas Division
  - Technical Permitting
    - Groundwater Advisory Unit (GAU)
    - Injection Permitting and Support
    - Environmental Permits and Support
    - Engineering Unit

# What We Do (1 of 3)



- Groundwater Determinations:
  - SWR 13: Set and cement sufficient surface casing to protect all usable quality water strata (BUQW)
  - New Drills, Injection, Re-entry, Recompletion, P&A, H-15, O&G Water Supply (W-1 if deeper than BUQW), Cathodic Protection

## What We Do (2 of 3)



- Geologic Isolation (Forms H-1, W-14)
  - No injection is allowed in Underground Source of Drinking Water (USDW)\*
  - Depth of sufficient isolation below BUQW/USDW
- Test for Inactive Wells (+25 yrs) – (Form H-15)
  - If requesting an extended area of review, then GW-2 may specify for H-15 purposes

# What We Do (3 of 3)



- Cathodic Protection and Microseismic wells
  - Required if depth is >30 feet (SWR 99 & SWR 100)
  - W-1 required if CP/MS well exceeds protection depth
  - Submit well schematic of CP/MS well with W-1
  - GW-2 for CP/MS wells cannot be used for other purposes



# Water Classification



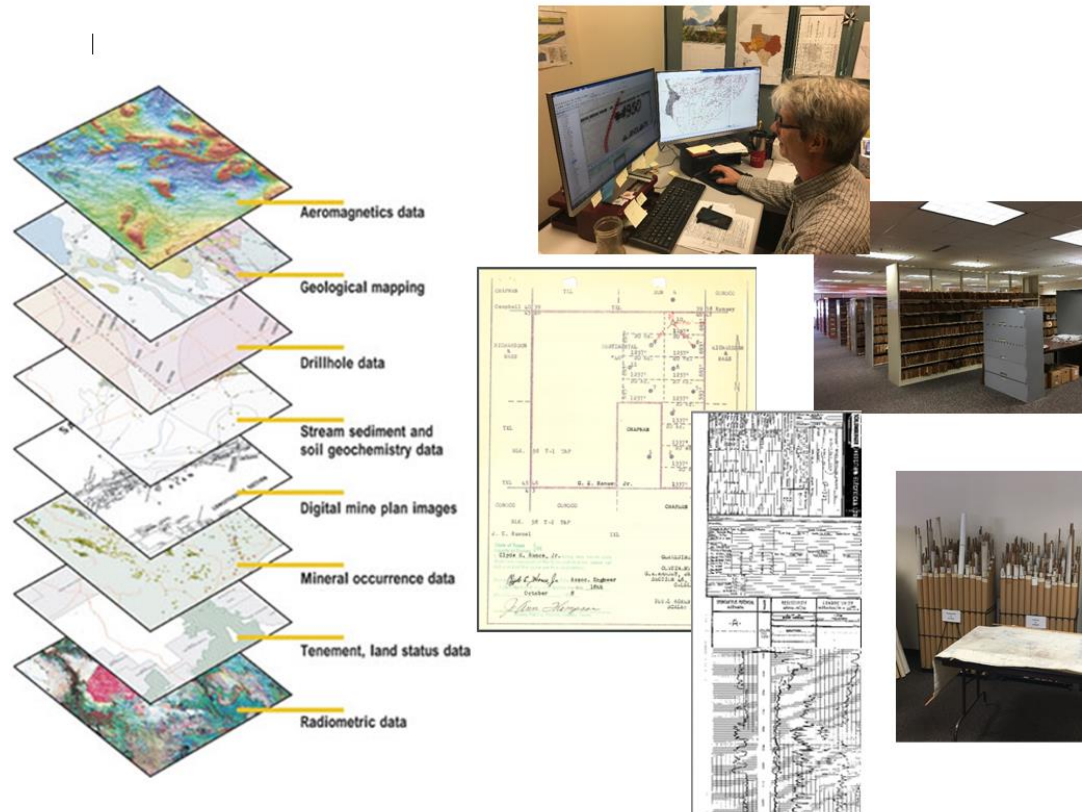
- Superior Quality Water (SQW)  $\leq 1,000$  ppm
  - Good tasting drinking water
- Base of Usable Quality Water (BUQW)  $\leq 3,000$  ppm
  - Protection depth as define by SWR 13
- Underground Source of Drinking Water (USDW)  $\leq 10,000$  ppm (Brackish)
  - Also protected by SDWA - No injection allowed in the USDW\*- Aquifer Exemption or EPA concurrence

# GAU Tools and Techniques (1 of 4)



The GAU uses Geographical Information System (GIS)

- Operator Provided Information
- Other Government and NGO Web Resources
- Legacy Cloth Maps and Well Files



# GAU Tools and Techniques (2 of 4)



## RRC Public GIS Viewer

- GIS tools for identifying wells and links to completion info and well logs

The screenshot displays the RRC Public GIS Viewer interface. The top navigation bar includes 'Visibility', 'Legend', 'Go To: SELECT COUNTY', 'Print', and a search bar with the value '12333133'. The 'Identify Wells' button is highlighted with a red circle. The left sidebar contains a legend with various well types, including 'Horizontal/Dir Surface Locations', 'Horizontal Well', and 'Directional Well', which are also highlighted with a red circle. The main map area shows a well location with a red star symbol. Two pop-up windows are visible: 'GIS Identify Results - Well Location Attributes' and 'Coordinates'.

**GIS Identify Results - Well Location Attributes**

Number of identify results: 1

Result #1

API	12333133
GIS WELL NUMBER	1H
GIS SYMBOL	Gas Well
DESCRIPTION	Operator reported location - Distances and Plat
GIS LOCATION SOURCE	
GIS LAT (NAD27)	29.175079
GIS LONG (NAD27)	-97.320332
GIS LAT (NAD83)	29.175329
GIS LONG (NAD83)	-97.320599

[Well Logs](#) [Drilling Permits](#) [Disposal Permits](#)

OPERATOR/WELLBORE  
WELLBORE STATUS: OPEN  
LAST PERMIT ISSUED: 760543  
LAST PERMIT OPERATOR NUMBER: 525398

**Coordinates**

Please Select a Coordinate System and enter the coordinates:

GCS\_North\_American\_1927

29.175079 -97.320332 [Show](#)

Sources: Esri, HERE, Garmin, [GCS, Intermap, INCREMENT P, NR...](#)

29.152887, Long: -97.379846 (WGS 84)

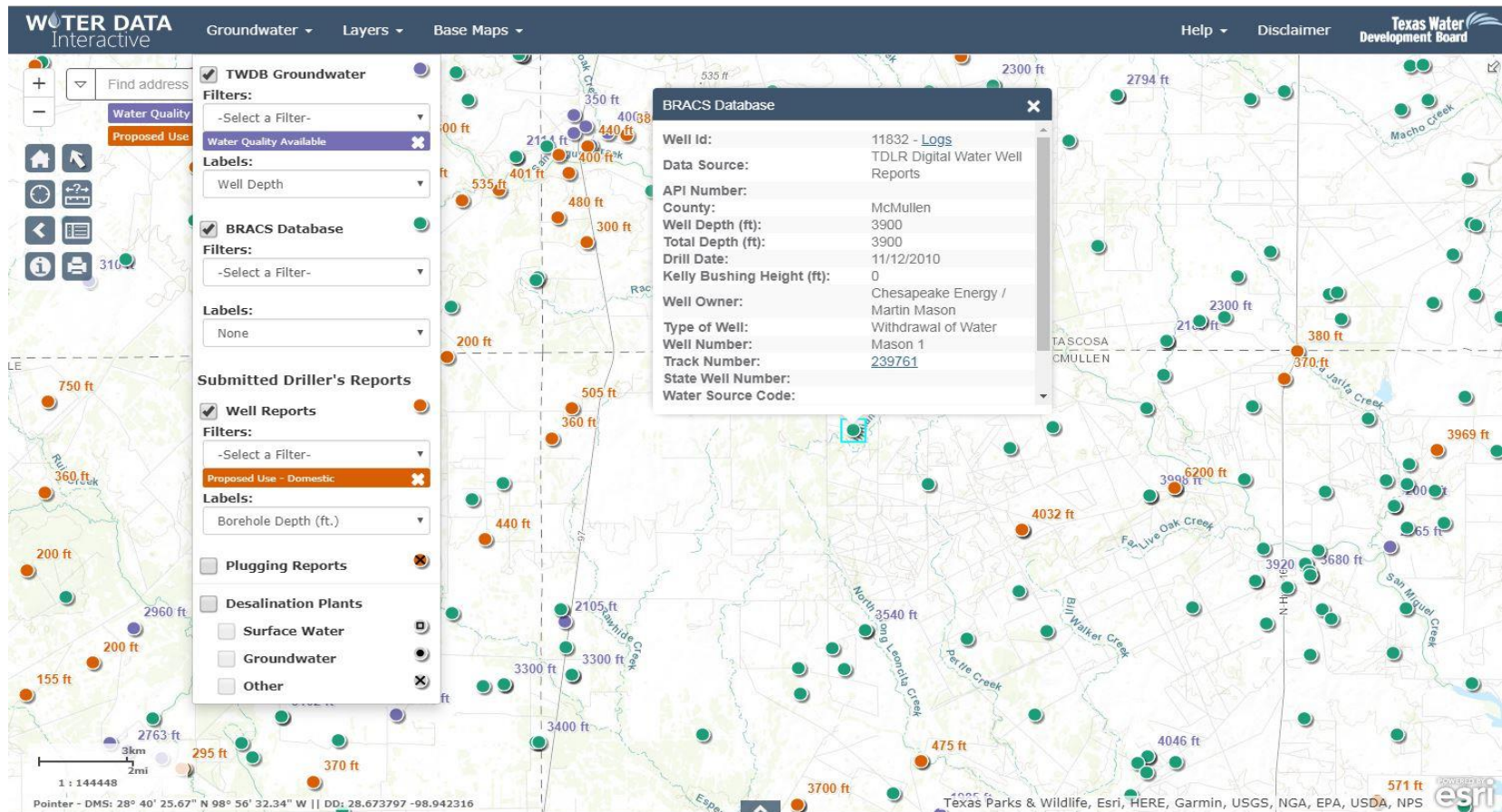


# GAU Tools and Techniques (3 of 4)



## Texas Water Development Board – Water Data Interactive

- <https://www3.twdb.texas.gov/apps/waterdatainteractive/groundwaterdataviewer>



- Link via “GAU Links” or
- <https://coastal.beg.utexas.edu/surfacecasing/#!/>

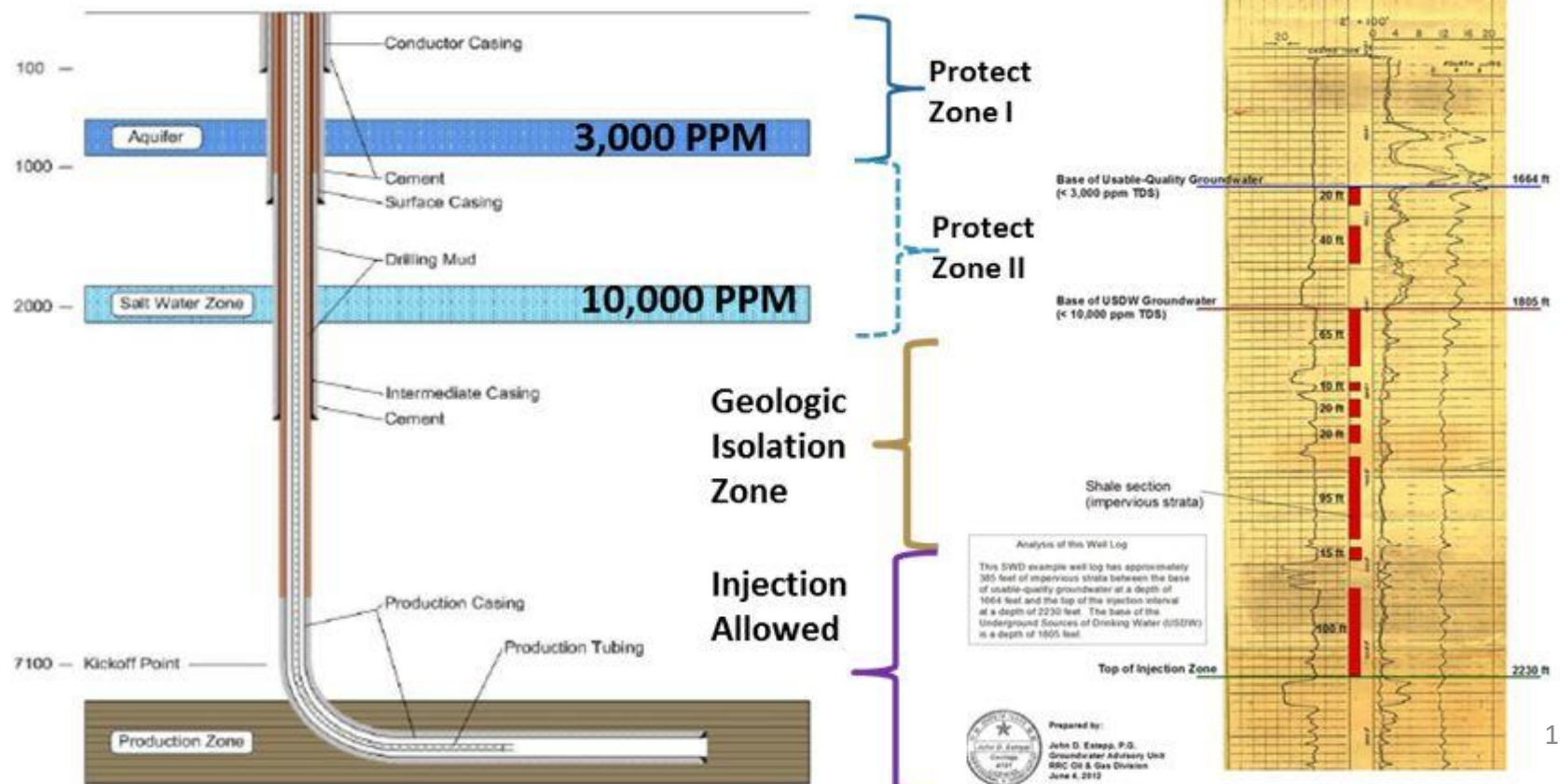




# How do we Protect?



- Provide Depths for Surface Casing, Cementing, and Plugging
- Locate Geologic Isolation For Injection Wells (H-1, W-14)
  - Depth of confining clay or shale below USDW is required 250' Below BUQW with 100' contiguous confinement





- SWR 13 requires surface casing protect groundwater as stated in Groundwater Advisory Unit (GAU) letter (Form GW-2)
  - Surface casing protects usable-quality water from drilling/completion process
  - Cement prevents annular migration of fluids, corrosion of casing and isolates formation



- SWR 14 requires plugs be set to isolate usable quality water strata and to separate any multiple UQW strata as determined by the GAU
  - Reason for multiple zones sometimes identified on GW-2
  - Plugs centered at protection depths



# Attachments for H-1 and W-14



- Additional info is required for H-1 & W-14
  - Representative well log required for H-1 and W-14
  - Attach the Form H-1A or the W-14 (injection interval?)
- GAU issues “no harm” letter for W-14 in addition to the GW-2 Determination
  - No harm letter includes depth of geologic isolation (layers of clay/shale)

# Reason for Filing



- Some GAU letters are multi-purpose, others are specific to the purpose of filing
  - Multi-purpose: New Well, P&A, Recompletion
  - Specific: H-1 & W-14 because review will include determination of the USDW and confinement necessary for UIC permit
  - H-15 multi-purpose or specific depending on the areal extent requested

# Areal Extent or Well Specific

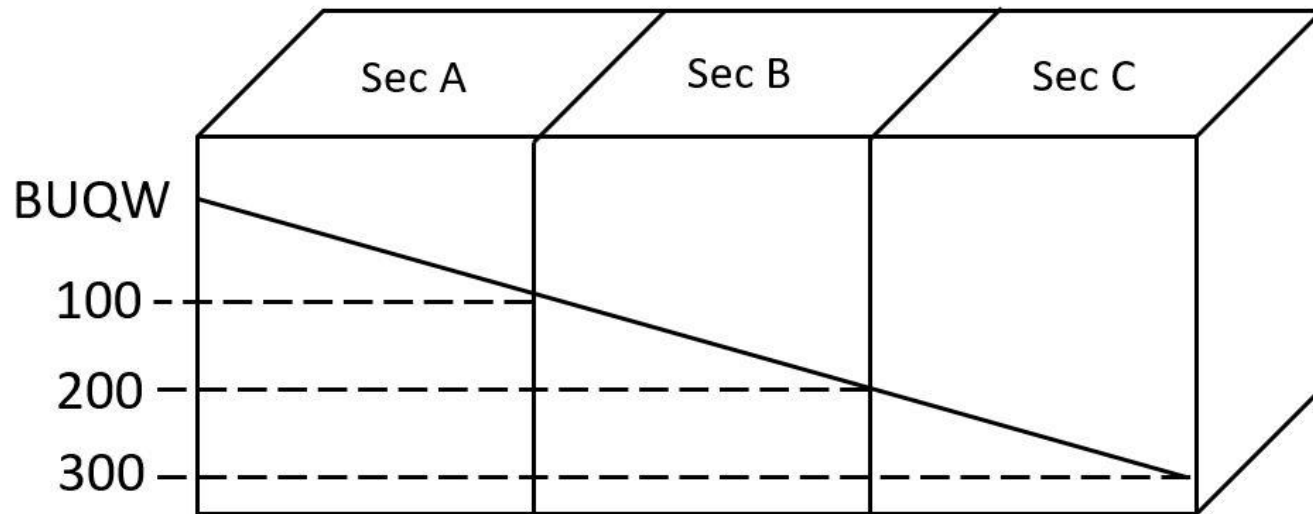


- Areal extent considered depends on the change in elevation to protection depth over the area requested
- Areal extent defined by section/survey or by the wells as specified (show on map)
- Specify the area or well API nos. in GW-1 remarks and/or attachment
- GAU letter will specify areal extent and/or list specific wells

# H-15 Areal Extent



- H-15 Special Condition (H15SC)
  - Extended areal extent specific for H-15 filings
  - If BUQW varies  $>50$  ft over the area requested, GW-2 will state the deepest BUQW
  - Example: BUQW 300 ft covering Sections A, B & C good for H-15 purposes only as stated in the GW-2



# GAU Tools and Techniques

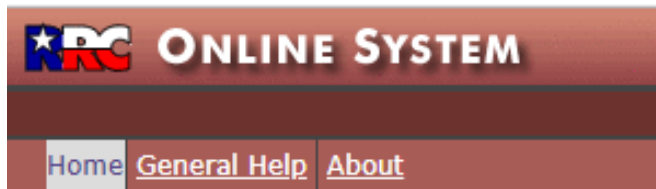


- Online Demo  
BEG – Surface Casing Estimator

# Application (Form GW-1)



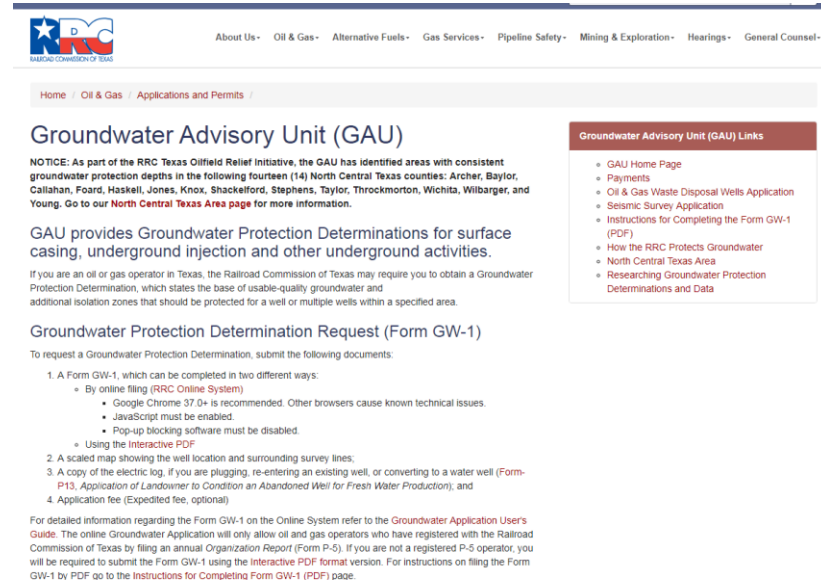
- Requests for Groundwater Determinations can be made one of two ways
  - Use the RRC On-Line System
  - Download a PDF form on the GAU Website
    - Email the completed GW-1 form to [gau@rrc.texas.gov](mailto:gau@rrc.texas.gov)
    - Send the completed GW-1 form through regular mail



## Welcome to the RRC Online System

### Main Application

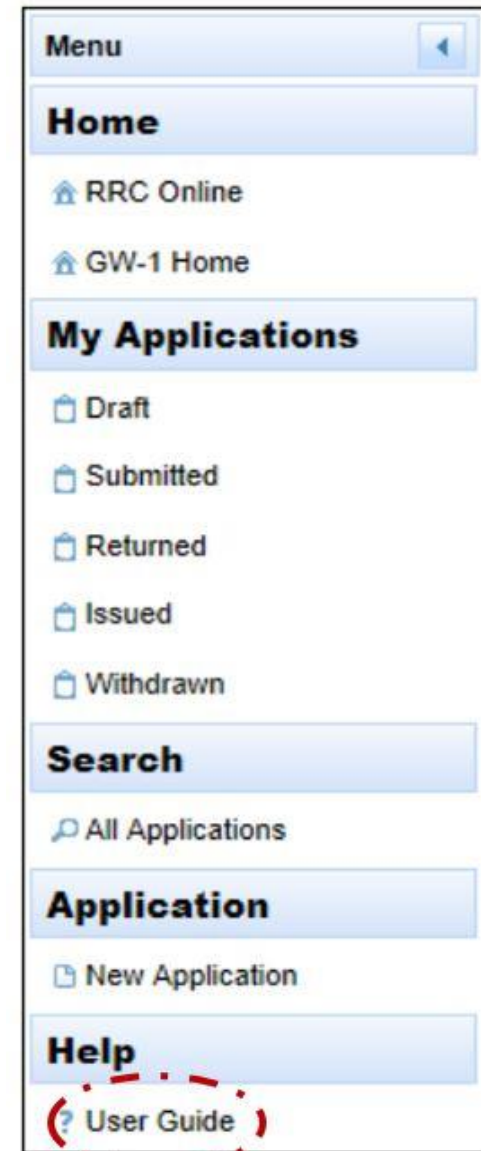
- [Account Administration](#)
- [Drilling Permits \(W-1\)](#)
- [Completions](#)
- [Groundwater \(GW-1\)](#)
- [Digital Well Log Submission](#)



# Menu and User Guide



- My Applications (Status)
  - Check application status
  - “Draft” means not submitted
- Search for previous filings
- New Application
- User Guide



# Reason for Filing



- GAU letters for UIC application must have the correct purpose of filing (H-1 or W-14)
  - Attach Form H-1A or W-14
  - Log required for H-1 and W-14

**Groundwater Application : GW-1**

**Filing Information**

*If Reason for Filing is 'New Production Well', data fields will be prepopulated if available from an entered API Number/DP Number. Data will not be prep Effective 02/01/2016, an Application Fee with Surcharge totaling \$250 will be payable on initial submission of this application.*

Reason for Filing\*

Areal Extent\*

Previous GAU No. for this well

Submission Date\*

Operator Information

Are you filing for P5 Operator? ☒

Injection into Non-producing Zone (W-14)

Injection into Producing Zone (H1)

Leak Test (LT)

Microseismics (MS)

New Production Well

Oil & Gas Water Supply Well

Plug and Abandon (P&A)

Recompletion (RC)

Reentry (RE)

Swabbing

API Number 42-

Radius Distance

Rig On Location

Regular Register NO.



# Areal Extent or Well Specific



- May request radius, section, abstract, lease...
- Specify wells in “Remarks” or attachment
- Show requested area on map (lease, survey, etc.)

**Groundwater Application : GW-1**

**Filing Information**

*If Reason for Filing is 'New Production Well', data fields will be prepopulated if available from an entered API Number/DP Number. Data will not be prepopulated for 'New Injection Well'. Effective 02/01/2016, an Application Fee with Surcharge totaling \$250 will be payable on initial submission of this application.*

Reason for Filing\*

Areal Extent\*

Previous GAU No. for this well

Submission Date\*

Operator Information

Are you filing for P5 Operator? ☒

Operator Name\*

API Number 42-

Radius Distance

Rig On Location ☐

Regular Register NO.

Operator Number\*

*Dropdown menu options for Areal Extent:*

- Section
- Abstract
- League
- Labor
- Porcion
- Share
- Tract
- Block
- Lot
- Lease

# Form GW-1 Demo



- Demo of the Online Groundwater (GW-1)

# Payment (1 of 3)



- “Next” at the bottom of the page to accept the terms and proceed to certification/payment.
- Warning! “Save” will save and exit! Oops! Return to GW-1 via Menu/My Applications/Draft

Upload Files

IMPORTANT: Click Upload to upload the selected attachments

Choose File Type\* Map

+ Choose

Upload

Cancel

File Name	File Size	File Type	Upload status
No results found for search.			
(1 of 1)			

Additional Information

Total Vertical Depth\*

Elevation\*

Formation at Total Vertical Depth

Remarks

250 characters remaining.

Save

Next

# Payment (2 of 3)



- Certification statement: Select to “Accept”, then the “Payment” button to proceed to payment.

The screenshot shows the "Groundwater Application : GW-1" interface. On the left is a navigation menu with sections: "Menu", "Home" (with links to "RRC Online" and "GW-1 Home"), "My Applications" (with links for "Draft", "Submitted", "Returned", "Issued", and "Withdrawn"), "Search" (with "All Applications"), "Application" (with "New Application"), and "Help" (with "User Guide"). The main content area is titled "Groundwater Application : GW-1" and "Complete the Application Submission Process". It includes a "View Application" button and three steps: "Step 1: Read the statement in the box below and click the Accept box to digitally sign the application.", "Step 2: Click the Payment box to pay fees. Payment is made at initial submission. No fees will be charged for resubmission.", and "Step 3: Once the payment is complete, select the RETURN button at the bottom of the page to go back to the submit application screen." Below the steps is a declaration box: "I declare under penalties prescribed in Texas Natural Resources Code Section 91.143, that I am authorized to make this report, that this report was prepared by me or under my supervision and direction, and that the data and facts stated therein are true, correct, and complete, to the best of my knowledge." At the bottom are three buttons: "Accept" (circled in red), "Payment" (circled in red), and "Cancel". A red arrow points to the "RETURN" button mentioned in Step 3.

# Payment (3 of 3)



- “Print Confirmation” here (now or never!)
- “Return” to go back and finalize submitting the GW-1. Otherwise, the GW-1 remains in “Draft” status (not submitted)

Payment Portal

1 Select Quantity 2 Contact Information 3 Verify Information 4 Pay Fee 5 Confirmation

GAO No: 191541

Name	MIKTHIEWACOCK
Company Name	ADOCK OPERATING LIMITED
Phone Number	(214) 628-2883
Email	Lakshonda.Hicks@rr.texas.gov

Fee Description	Amount	Quantity	Total
GAU - Surface Casing	\$ 250.00	1	\$ 250.00
SAC Fee			\$ 250.00
Taxes/gov Price			\$ 250.00

Payment Information	
Payment Amount	\$250.00
Date and Time	05/08/2018 05:10:01 AM
Trans Number	4558M021FF2878
Authorization Code	T837123
Register Number	95183


Use the Print Confirmation button below to create a printable receipt and confirm your payment.

[Print Confirmation](#) [Return](#)

# Application Status



- If an application is returned, “Edit and Resubmit” to make changes to the application and resubmit.



**Railroad Commission of Texas**

User: Laura Adams

Menu

Home

[RRC Online](#)

[GW-1 Home](#)

My Applications

[Draft](#)

[Submitted](#)

[Returned](#)

[Issued](#)

[Withdrawn](#)

Search

[All Applications](#)

Application

[New Application](#)

Help

[User Guide](#)

Groundwater Application : GW-1

Application Count : 1

My Applications

Showing 1-1 out of 1 applications

	GAU Number	Date Submitted	Application Status	Submitter Name	Operator Name	County	Lease Name	Well Number	Expedite	Ver
<b>Actions</b>	191720	05-23-2018	Admin Returned	Laura Adams	ELEON OPERATORS, LLC	CLAY	JONES	1H	N	1

Showing 1-1 out of 1 applications

Actions

[Edit and Resubmit](#)

[View PDF](#)

[Withdraw](#)

[View Return Email](#)

# GAU Letter Search



- Search for GAU letter using API, lease no. etc.
- Online GAU letters from June 2015 to current

**Railroad Commission of Texas**

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**Groundwater Application : GW-1**

**Search Applications**

GAU Number	<input type="text"/>	Trace Number	<input type="text"/>	Application Status	<input type="text" value="Select Status"/>	Operator Name	<input type="text"/>	Submitter Name	<input type="text"/>	Operator Number	<input type="text"/>
County	<input type="text" value="Select One"/>	Lease Name	<input type="text"/>	Lease Number	<input type="text"/>	Well Number	<input type="text"/>	API Number	<input type="text"/>	Survey Name	<input type="text"/>
Abstract Number	<input type="text"/>	Block	<input type="text"/>	Township	<input type="text"/>	Section	<input type="text"/>	Tract	<input type="text"/>	Lot	<input type="text"/>
League	<input type="text"/>	Labor	<input type="text"/>	Porcion	<input type="text"/>	Share	<input type="text"/>	SC Number	<input type="text"/>		
Submitted Date From	<input type="text"/>	To	<input type="text"/>	Determination Letter - Date Issued From	<input type="text"/>	To	<input type="text"/>	Rig On Location	<input type="checkbox"/>		

*Click the Clear Search button to clear the search criteria and results.*

---

Showing 0-0 out of 0 applications

GAU Number	Date Submitted	Application Status	Submitter Name	Operator Name	Operator Number	County	Lease Name	Well Number	API Number	Survey Name
No results found for search.										

Showing 0-0 out of 0 applications

# Summary



- Filing online helps expedite
- No Special Characters (!@#\$%^&\*) or Spaces
- Chrome Browser recommended
- Map/plat – Info consistent with GW-1/W-1
- More data favors the desired outcome
- Shout out for more data (shallow log data)
- Questions? Rig on Location! Call Us😊



# GAU Contact Info



Groundwater Advisory Unit	512-463-2741
James Harcourt, PG, Manager	463-2980 James.Harcourt@rrc.Texas.gov
Heather Hesskew	463-3184 Heather.Hesskew@rrc.Texas.gov
LaShonda Hicks	463-3052
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Norman Gearhart, PG	463-2937
Toni Eilerts, PG	463-7280
Karen Cassidy, PG	463-6209
Hank Zhao, PhD, PG	463-3313
Royce Massey, GIT	462-7017
Bryce McKee, PG	463-2259
Stephan Paetzold, PG	463-3163

# Questions ?



Questions?



## Evaluation

- Please complete the evaluation available on the RRC website at <https://survey.alchemer.com/s3/6403402/2021-RRC-Regulatory-Webinars-Oil-Gas-and-Pipeline-Safety-Evaluation>

## Archive Video

- A link to the archive video of the webcast will be available on the same webpage as the presentation.